

EXHIBIT AALIGNMENT of B7H2 long and short forms from 00-212CP1, SEQ2 and SEQ4

ALIGN calculates a global alignment of two sequences
version 2.0uPlease cite: Myers and Miller, CABIOS (1989)
>B7H2 long - SEQ 2 - 00-212CP1
273 aa vs.
>B7H2 short - SEQ ID 4 - 00-212CP1
183 aa
scoring matrix: BLOSUM50, gap penalties: -12/-2
66.7% identity; Global alignment score: 993

```
      10      20      30      40      50      60
/tmp/s MIFLLLMLSLELQLHQIAALFTVTVPKELYIIHGSNVTLECNFDTGSHVNLGAITASLQ
      .....
B7H2    MIFLLLMLSLELQLHQIAALFTVTVPKELYIIHGSNVTLECNFDTGSHVNLGAITASLQ
      10      20      30      40      50      60
```

```
      70      80      90     100     110     120
/tmp/s KVENDTSPHRERATLLEEQLPLGKASFHIPQVQVRDEGQYQCIIYGVAWDYKYLTLKVK
      .....
B7H2    KVENDTSPHRERATLLEEQLPLGKASFHIPQVQVRDEGQYQCIIYGVAWDYKYLTLKVK
      70      80      90     100     110     120
```

```
      130     140     150     160     170     180
/tmp/s ASYRKINTHILKVPETDEVELTCQATGYPLAEVSWPNVSV PANTSHSRTPEGLYQVTSVL
B7H2    G-----
```

```
      190     200     210     220     230     240
/tmp/s RLKPPPGRNFSCVFWNTHVRELTLASIDLQSQMEPRTHPTWLLHIFIPSCIIAFIFIATV
      .....
B7H2    -----QMEPRTHPTWLLHIFIPSCIIAFIFIATV
                        130      140      150
```

```
      250     260     270
/tmp/s IALRKQLCQKLYSSKDTTKRPVTTTKREVNSAI
      .....
B7H2    IALRKQLCQKLYSSKDTTKRPVTTTKREVNSAI
      160     170     180
```

REC'D APR 16 2002

APR 5 2002

Received By 

APRIL 01, 2002

PTAS

Chief Information Officer
Washington, DC 20231
www.uspto.gov

ALSTON & BIRD LLP
LESLIE T. HENRY
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000



101974875A

UNITED STATES PATENT AND TRADEMARK OFFICE
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RECORDATION DATE: 01/22/2002

REEL/FRAME: 012534/0752
NUMBER OF PAGES: 13

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:

COYLE, ANTHONY J.

DOC DATE: 11/05/2001

ASSIGNOR:

FRASER, CHRISTOPHER C.

DOC DATE: 11/13/2001

ASSIGNOR:

MANNING, STEPHEN

DOC DATE: 11/02/2001

ASSIGNEE:

MILLENNIUM PHARMACEUTICALS, INC.
75 SIDNEY STREET
CAMBRIDGE, MASSACHUSETTS 02139

SERIAL NUMBER: 09910174

PATENT NUMBER:

FILING DATE: 07/20/2001

ISSUE DATE:

COPY

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FLH
4-16-02

KIMBERLY WHITE, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

To the Honorable ()
Please record the at



101974875

Attorney Dkt. No.: 35800/236924 (5800-149A)

1. Name of conveying party(ies):

Anthony J. Coyle
Christopher C. Fraser
Stephen Manning

/ 22.02

2. Name and address of receiving party(ies):

Millennium Pharmaceuticals, Inc.
75 Sidney Street
Cambridge, MA 02139

Additional name(s) of conveying party(ies) attached? Yes ☐ No ☒

3. Nature of conveyance:

- ☒ Assignment
☐ Merger
☐ Security Agreement
☐ Change of Name
☐ Other

Execution Date: Anthony J. Coyle, 11/5/01;
Christopher C. Fraser, 11/13/01; Stephen Manning,
11/2/01

Additional name(s) & address(es) attached? Yes ☐ No ☒4. Application No. 09/910,174; Filed July 20, 2001Patent No.

If this document is being filed together with a new application, the execution date of the application is:

Additional numbers attached? Yes ☐ No ☒

5. Name and address of party to whom correspondence concerning document should be mailed:

CUSTOMER NO. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000

6. Total number of applications and patents involved:

17. Total fee (37 CFR 3.41) \$40.00
☒
☐

Enclosed

Authorized to be charged to deposit account

8. Deposit account number: 16-0605

DO NOT USE THIS SPACE

9. Statement and signature: *To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.*

Name of Person Signing: Leslie T. Henry

Reg. No. 45,714

November 20, 2001
Date

Total number of pages including cover sheet, attachments, and document: 15

ASSIGNMENT

THIS ASSIGNMENT, made by us, Anthony J. Coyle, citizen of the United States of America, residing at 30 Clarendon Street, Boston, Massachusetts 02116; Christopher C. Fraser, citizen of the United States of America, residing at 52 Grassland Street, Lexington, Massachusetts 02421; and Stephen Manning, citizen of the United States of America, residing at 151 Mystic Street, Apt. M5, Arlington, Massachusetts 02474, respectively;

WITNESSETH: That,

WHEREAS, we are the joint inventors of certain new and useful improvements in B7-H2 MOLECULES, NOVEL MEMBERS OF THE B7 FAMILY AND USES THEREOF for which an application for United States Letters Patent has been filed in the United States Patent and Trademark Office on July 20, 2001, under Application No. 09/910,174, and

WHEREAS, Millennium Pharmaceuticals, Inc., a Delaware corporation having a principal place of business at 75 Sidney Street, Cambridge, County of Middlesex, State of Massachusetts 02139, hereinafter referred to as assignee, is desirous of acquiring the entire right, title and interest in and to said invention as described in said application, and in and to any and all Letters Patent which shall be granted therefor in the United States of America and all foreign countries;

NOW, THEREFORE, To Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, we have sold and by these presents do hereby sell, assign, transfer, and convey unto the said assignee, its successors and assigns, the entire right, title, and interest in and to the said invention and application, and in and to any and all continuations, continuations-in-part, or divisions thereof, and in and to any and all Letters Patent of the United States of America and all foreign countries or reissues thereof which may be granted therefor or thereon, for the full end of the term for which said Letters Patent may be granted, together with the right to claim the priority of said application in all foreign countries in accordance with the International Convention, the same to be held and enjoyed by said assignee, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by us if this assignment and sale had not been made.

We hereby request that said Letters Patent be issued in accordance with this assignment.

We further covenant and agree that, at the time of the execution and delivery of these presents, we possess full title to the invention and application above-mentioned, and that we have the unencumbered right and authority to make this assignment.

We further covenant and agree to bind our heirs, legal representatives, and assigns promptly to communicate to said assignee or its representatives any facts known to us relating to said invention, to testify in any interference or legal proceedings involving said invention, to execute any additional papers which may be requested to confirm the right of the assignee, its representatives, successors, or assigns to secure patent or similar protection for the said invention in all countries and to vest in the assignee complete title to the said invention and Letters Patent, without further compensation, but at the expense of said assignee, its successors, assigns, and other legal representatives.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this 5th day of November, 2001.

AS Coyle (SEAL)
Anthony J. Coyle

____ (SEAL)
Christopher C. Fraser

____ (SEAL)
Stephen Manning

STATE OF Massachusetts)
)
COUNTY OF Middlesex)

I, Simonne Corriveau, a Notary Public for said County and State, do hereby certify that Anthony J. Coyle personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this the 5th day of November, 2001.

(Official Seal)

Simonne Corriveau
Notary Public

My commission expires: 9/1/2006

STATE OF _____)
)
COUNTY OF _____)

I, _____, a Notary Public for said County and State, do hereby certify that Christopher C. Fraser personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 2001.

(Official Seal)

Notary Public

My commission expires: _____

STATE OF _____)
)
COUNTY OF _____)

I, _____, a Notary Public for said County and State, do hereby
certify that Stephen Manning personally appeared before me this day and acknowledged the due
execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 2001.

(Official Seal)

Notary Public

My commission expires: _____

RTA01/2101419v1

ASSIGNMENT

THIS ASSIGNMENT, made by us, Anthony J. Coyle, citizen of the United States of America, residing at 30 Clarendon Street, Boston, Massachusetts 02116; Christopher C. Fraser, citizen of the United States of America, residing at 52 Grassland Street, Lexington, Massachusetts 02421; and Stephen Manning, citizen of the United States of America, residing at 151 Mystic Street, Apt. M5, Arlington, Massachusetts 02474, respectively;

WITNESSETH: That,

WHEREAS, we are the joint inventors of certain new and useful improvements in B7-H2 MOLECULES, NOVEL MEMBERS OF THE B7 FAMILY AND USES THEREOF for which an application for United States Letters Patent has been filed in the United States Patent and Trademark Office on July 20, 2001, under Application No. 09/910,174, and

WHEREAS, Millennium Pharmaceuticals, Inc., a Delaware corporation having a principal place of business at 75 Sidney Street, Cambridge, County of Middlesex, State of Massachusetts 02139, hereinafter referred to as assignee, is desirous of acquiring the entire right, title and interest in and to said invention as described in said application, and in and to any and all Letters Patent which shall be granted therefor in the United States of America and all foreign countries;

NOW, THEREFORE, To Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, we have sold and by these presents do hereby sell, assign, transfer, and convey unto the said assignee, its successors and assigns, the entire right, title, and interest in and to the said invention and application, and in and to any and all continuations, continuations-in-part, or divisions thereof, and in and to any and all Letters Patent of the United States of America and all foreign countries or reissues thereof which may be granted therefor or thereon, for the full end of the term for which said Letters Patent may be granted, together with the right to claim the priority of said application in all foreign countries in accordance with the International Convention, the same to be held and enjoyed by said assignee, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by us if this assignment and sale had not been made.

We hereby request that said Letters Patent be issued in accordance with this assignment.

We further covenant and agree that, at the time of the execution and delivery of these presents, we possess full title to the invention and application above-mentioned, and that we have the unencumbered right and authority to make this assignment.

We further covenant and agree to bind our heirs, legal representatives, and assigns promptly to communicate to said assignee or its representatives any facts known to us relating to said invention, to testify in any interference or legal proceedings involving said invention, to execute any additional papers which may be requested to confirm the right of the assignee, its representatives, successors, or assigns to secure patent or similar protection for the said invention in all countries and to vest in the assignee complete title to the said invention and Letters Patent, without further compensation, but at the expense of said assignee, its successors, assigns, and other legal representatives.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this 13th day of November, 2001.

_____(SEAL)

Anthony J. Coyle

Christopher C. Fraser (SEAL)

Christopher C. Fraser

_____(SEAL)

Stephen Manning

STATE OF _____)
)
COUNTY OF _____)

I, _____, a Notary Public for said County and State, do hereby
certify that Anthony J. Coyle personally appeared before me this day and acknowledged the due
execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 2001.

(Official Seal)

Notary Public

My commission expires: _____

STATE OF Massachusetts)
)
COUNTY OF Middlesex)

I, Simonne Corriveau, a Notary Public for said County and State, do hereby
certify that Christopher C. Fraser personally appeared before me this day and acknowledged the
due execution of the foregoing instrument.

Witness my hand and official seal, this the 13th day of November, 2001.

(Official Seal)

Simonne Corriveau
Notary Public

My commission expires: 9/1/2006

STATE OF _____)
)
COUNTY OF _____)

I, _____, a Notary Public for said County and State, do hereby
certify that Stephen Manning personally appeared before me this day and acknowledged the due
execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 2001.

(Official Seal)

Notary Public

My commission expires: _____

RTA01/2101419v1

ASSIGNMENT

THIS ASSIGNMENT, made by us, Anthony J. Coyle, citizen of the United States of America, residing at 30 Clarendon Street, Boston, Massachusetts 02116; Christopher C. Fraser, citizen of the United States of America, residing at 52 Grassland Street, Lexington, Massachusetts 02421; and Stephen Manning, citizen of the United States of America, residing at 151 Mystic Street, Apt. M5, Arlington, Massachusetts 02474, respectively;

WITNESSETH: That,

WHEREAS, we are the joint inventors of certain new and useful improvements in B7-H2 MOLECULES, NOVEL MEMBERS OF THE B7 FAMILY AND USES THEREOF for which an application for United States Letters Patent has been filed in the United States Patent and Trademark Office on July 20, 2001, under Application No. 09/910,174, and

WHEREAS, Millennium Pharmaceuticals, Inc., a Delaware corporation having a principal place of business at 75 Sidney Street, Cambridge, County of Middlesex, State of Massachusetts 02139, hereinafter referred to as assignee, is desirous of acquiring the entire right, title and interest in and to said invention as described in said application, and in and to any and all Letters Patent which shall be granted therefor in the United States of America and all foreign countries;

NOW, THEREFORE, To Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, we have sold and by these presents do hereby sell, assign, transfer, and convey unto the said assignee, its successors and assigns, the entire right, title, and interest in and to the said invention and application, and in and to any and all continuations, continuations-in-part, or divisions thereof, and in and to any and all Letters Patent of the United States of America and all foreign countries or reissues thereof which may be granted therefor or thereon, for the full end of the term for which said Letters Patent may be granted, together with the right to claim the priority of said application in all foreign countries in accordance with the International Convention, the same to be held and enjoyed by said assignee, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by us if this assignment and sale had not been made.

We hereby request that said Letters Patent be issued in accordance with this assignment.

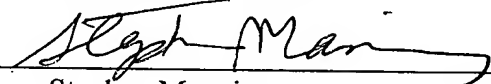
We further covenant and agree that, at the time of the execution and delivery of these presents, we possess full title to the invention and application above-mentioned, and that we have the unencumbered right and authority to make this assignment.

We further covenant and agree to bind our heirs, legal representatives, and assigns promptly to communicate to said assignee or its representatives any facts known to us relating to said invention, to testify in any interference or legal proceedings involving said invention, to execute any additional papers which may be requested to confirm the right of the assignee, its representatives, successors, or assigns to secure patent or similar protection for the said invention in all countries and to vest in the assignee complete title to the said invention and Letters Patent, without further compensation, but at the expense of said assignee, its successors, assigns, and other legal representatives.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this 2nd day of November, 2001.

_____(SEAL)
Anthony J. Coyle

_____(SEAL)
Christopher C. Fraser


_____(SEAL)
Stephen Manning

STATE OF _____)
)
COUNTY OF _____)

I, _____, a Notary Public for said County and State, do hereby
certify that Anthony J. Coyle personally appeared before me this day and acknowledged the due
execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 2001.

(Official Seal)

Notary Public

My commission expires: _____

STATE OF _____)
)
COUNTY OF _____)

I, _____, a Notary Public for said County and State, do hereby
certify that Christopher C. Fraser personally appeared before me this day and acknowledged the
due execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 2001.

(Official Seal)

Notary Public

My commission expires: _____

STATE OF Massachusetts)

COUNTY OF Middlesex)

I, Simonne Corriveau, a Notary Public for said County and State, do hereby certify that Stephen Manning personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this the 2nd day of November, 2001.

(Official Seal)

Simonne Corriveau
Notary Public

My commission expires: 9/1/2006

RTA01/2101419v1